REMARKS

The applicants appreciate the Examiner's thorough examination of the application and request reexamination and reconsideration of the application in view of the following remarks.

The Examiner rejects claims 1, 3-6, 9, 11-14, 24, and 26-27 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,420,008 to *Lewis et al.* in view of U.S. Patent No. 6,785,144 to *Akram*, and further in view of U.S. Patent No. 6,412,701 to *Kohama et al.*, and claim 10 under 35 U.S.C. §103(a) as being unpatentable over *Lewis et al.* in view of *Akram* in view of *Kohama et al.* as applied above, and further in view of U.S. Patent No. 4,774,434 to *Bennion*.

Claim 1 of the subject application is directed to an electrically active textile article comprising fabric, a circuit including traces and pads on a flexible substrate secured to the fabric by a thermoplastic reflow process, and at least one electronic component populating the circuit. Independent claims 24 and 26 also include the feature of the flexible substrate secured to the fabric by a thermoplastic reflow process, while independent claim 27 includes the feature of the substrate ultrasonically welded to the fabric.

Lewis et al. is directed to a display sticker with an integral flasher circuit and power source. A thin flexible sheet 12 has a printed circuit board 14 adhesively affixed to its back surface 16. The front surface of the sticker may have printed thereon a product or company name, or other advertising indicia. The sticker preferably includes a pre-punched hole 24 through the flexible sheet 12 for an LED 26. The front surface of the circuit board is flat and free of components except for the LED. *See* Col. 3, lines 21-38 of *Lewis et al.* The LED attracts the attention of a desired observer to the sticker.

The Examiner alleges that *Lewis et al.* discloses all of the elements of the applicants' claimed invention except for a circuit including traces and pads on a substrate and securing the substrate to the fabric by a thermoplastic reflow process. The Examiner further alleges that it would

have been obvious to construct the circuit with traces and pads as suggested by *Akram* since these traces and pads are commonly used in printed circuit boards to interconnect various electronic components. The Examiner also alleges that it would have been obvious to provide the securing means as a thermoplastic reflow process such as ultrasonic welding as shown in *Kohama et al.* "in order to provide a more permanent attachment of the fabrics".

However, *Lewis et al.* specifically teaches away from such a more permanent attachment as suggested by the Examiner. As previously noted, one of the main objectives of *Lewis et al.* is to provide lightweight display devices designed to be removably affixed to various fabric articles. *See* Col. 1, lines 10-15 of *Lewis et al.* In fact, *Lewis et al.* discusses the disadvantages of permanently affixing a circuit to an article of clothing and the desire to provide a circuit which can be readily removed from the article of clothing numerous times. A few examples of this are shown below:

> "However, such displays are designed either to be permanently affixed to an article of clothing, or to have different parts of the display located in different places in the article of clothing, or both." Col. 1, lines 59-62 of *Lewis et al.* (emphasis added) (from the Background of *Lewis et al.* differentiating *Lewis et al.* from the prior art)

> "There remains a need for a simple, inexpensive, self-contained sticker with an electronically controlled, dynamic display capable of being readily affixed to and readily removed from an article of clothing or other fabric article, and having minimal weight, thickness, and stiffness." Col. 2, lines 23-28 of *Lewis et al.* (emphasis added)

> "The present invention meets these needs and offers other advantages with a display sticker with an integral flasher and power source adapted to be adhesively affixed to but readily

removed from an article of clothing or other fabric article." Col. 2, lines 30-33 of *Lewis et al.*

The Examiner notes throughout the Office Action that the use of ultrasonic welding would provide a more permanent attachment to the fabric. *See* portions of pages 2 and 3 of the Office Action reproduced below:

> "It would have been obvious at the time the invention was made to provide the securing means as a thermoplastic reflow process such as ultrasonic welding rather than adhesive in order to provide a more permanent attachment of the fabrics." (emphasis added)

> "While Lewis does show a flexible substrate being secured with an adhesive, it remains the examiner's opinion that substituting a more permanent type of securing [as] such ultrasonic welding would allow for greater durability in the finished product." (emphasis added)

Providing a more permanent attachment as suggested by the Examiner is contrary to the stated purpose of *Lewis et al.*, i.e., to provide a device that is readily removed from the fabric. It would not be obvious to one of skill in the art to modify a device designed to be readily removed from an object by providing a more permanent attachment.

Additionally, the Examiner alleges that a flexible circuit ultrasonically welded to a fabric is still capable of being removed from the fabric. Ultrasonic welding is a method of joining objects together through the use of high frequency acoustic vibrations which causes the object being ultrasonically welded to melt. Once cooled, a weld between the objects is formed.

An ultrasonic weld prevents the objects from easily being removed. Such a weld must be

broken in order for the objects to be removed from one another, and if such a weld is broken, it will not be a clean or neat separation as one of the objects has melted onto the other.

As noted above, the stated purpose of *Lewis et al.* is to provide a device that is readily removed from the fabric. Using an ultrasonic weld would not allow the *Lewis et al.* device to be readily removed from the fabric.

As *Lewis et al.* specifically teaches that the substrate is readily removable from the fabric and teaches away from permanently securing the substrate to the fabric, it would not be obvious to modify the adhesive of *Lewis et al.* to provide a more permanent attachment. Accordingly, as *Lewis et al.* teaches away from such a modification, independent claims 1, 2, 26, and 27, and their respective dependent claims, are patentable over the combination of references.

Each of the Examiner's rejections has been addressed or traversed. Accordingly, it is respectfully submitted that the application is in condition for allowance. Early and favorable action is respectfully requested.

If for any reason this Response is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned or his associates, collect in Waltham, Massachusetts, at (781) 890-5678.

Respectfully submitted,

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